Rec'd PTO 2 MAY 2005

PATENT COOPERATION TREATY

PCT

REC'D 13 JAN 2005
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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P04635400	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/JP 03/15103	International filing date (day/month/year) 26.11.2003	Priority date (day/month/year) 28.11.2002

International Patent Classification (IPC) or both national classification and IPC
G06F17/50

Applicant
YAZAKI CORPORATION

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the International application

Date of submission of the demand	Date of completion of this report
24.06.2004	
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Radev, B Telephone No. +31 70 340-3682

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/JP 03/15103

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-35 as originally filed

Claims, Numbers

1-9 as originally filed

Drawings, Sheets

1/8-8/8 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-9
	No:	Claims	
Inventive step (IS)	Yes:	Claims	4,5,7
	No:	Claims	1-3,6,8,9
Industrial applicability (IA)	Yes:	Claims	1-9
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document/s/:
D1: EP-A-1236989

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1, 6, 8, 9 does not involve an inventive step in the sense of Article 33(3) PCT.

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document): a method for predicting the bending durability of a plurality of wires (p.3 line 34 "method of estimating flexure life of a wire harness") and a bend protection member (p. 3, line 36 "predetermined protective tube") using finite element method (p. 3, lines 38 - 39), the method comprising:

a step of setting up the plurality of wires, the bend protection member, an atmosphere temperature (par. 70), pre-bending initial shapes for the wires and the bend protection member (par. 20);

a stress calculation step of calculating stress (change of strain) for each of the finite elements of the finite element model, the stress produced by bending the elements (par. 132 - 135);

determining the maximum stress of the plurality of wires and the bend protection member (par 135);

obtaining a prediction function (par 28.). D1 discloses also that the function takes into account also the temperature (par. 133);

and using the prediction function to define the number of bends the wire can endure (par. 144).

The subject-matter of claim 1 therefore differs from this known D1 in that D1 uses a finite element method for modelling the wire harness, while claim 1 defines an infinite element model.

The problem to be solved by the present invention may therefore be regarded as how to implement a computer model of the wires. The infinite element modelling is a well known technique for creating and analysing computer models in the field of CAD. Therefore it is merely one of several straightforward possibilities from which the skilled

person would select, in accordance with circumstances, without the exercise of inventive skills in order to solve the problem. Therefore claim cannot be considered as involving an inventive step (Article 33(3) PCT).

The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 6, 8, 9, which therefore are also considered not inventive.

Dependent claims 2, 3 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step. The reasons are as follows:

Claim 2 lacks inventive step because the D1 discloses a step of identifying the points of the wire subjected to maximal stress where the disconnection occurs (par. 138).

Claim 3 also lacks an inventive step because D1 further discloses an employment of a curve representing the statistically obtained relationship between the stress and the number of bends (par. 40).

The combination of the features of dependent claims 4, 5 and 7 is neither known from, nor rendered obvious by, the available prior art. The reasons are as follows:

The prior art does not propose any solution of the problem of ordering the wires in a wire harness according to the thickness of said wires neither alone nor in combination with another document. Therefore the skilled person would not arrive at the subject-matter of claims 4 and 7 without exercising inventive activity.

The prior art does not propose the modelling of the individual wires in the wire harness in order to determine the bending life of said harness based on the wire with the shortest bending life. On the contrary, the teaching of D1 is that the whole harness is represented by a model of a single wire. Therefore the skilled person would not arrive at the subject-matter of claim 5 without exercising inventive step.

The present application does not meet the criteria of Article 6 and Rule 6.3 (b)(i)(ii) PCT, because the subject-matter of claims 1, 6, 8, 9 does not comprise all features for solving the technical problem defined by the present application. On page 3 of the description the applicant states that a method is required that can predict not only the overall product (wire harness) life, but the lives of the individual electric wires and the

grommet. The independent claims however, lack features regarding the solution of the aforementioned problem.